

# SEQUENCE LISTING

<110> Cahoon, Edgar B

<120> A Cytochrome P450 enzyme associated with the synthesis of delta-12-epoxy fatty acids

<130> BB1465 US. NA

<140> 09/909566

<141> 2001-07-20

<150> 60/219833

<151> 2000-07-21

<160> 7

<170> Microsoft Office 97

<210> 1

<211> 1733

<212> DNA

<213> Euphorbia lagascae

<400> 1

```
gcataaaagg aaaatggagc agaaaaatct ctcttttccg agcatttttaa taagttttct 60
gcttgtttta atcttagtag tagtcatgag gttgtggaag aaacagaatc cacctccagg 120
gccatggaag ttctctatca taggtaatct tcctcattta ttactcactt ctgatctagg 180
ccatgaacgt ttagagcct tggctcaaat ttatggacct gttatgagtc ttcaaattgg 240
ccaagtttca gctgttgtca tttcttcagc tgaagcagcc aaagagggtta tgaaaactca 300
ggctgatgcc ttcgcccaac gccctatcgt ctgggacgca cagatttgtgt ttataatcg 360
gaaagatgtc ttgtttgctt catatggaga tcaactggagg cagatgaaga aaatttggtat 420
acttgaattt ctgagtgcc aaaaagttca atcctccagg ttaatccgag aggaagaaat 480
ggaggatgcc atcacattcc tccgttcgaa agccggatct ccggtcaata ttacaaagat 540
catttatggc attataattt cgatcatgat aagaacatcc gttggttaatt gtaagcaaaa 600
agaaagattg ctgagtgttg ccgatgcagt caatgaggca gcgacgagtt ttggcaccgc 660
agacgctttt ccgacgtgga aattacttca ctatatcatt ggagctgagt caaaaccag 720
gcgtttgcat caggagattg acgatatact tgaagagatt cttaatgaac acaaagccaa 780
taagcctttt gaagcggata acttaatgga tgttctattg aatcttcaa aaaatggaaa 840
cgttccagtg ccagtgacaa acgaaagcat caaagcatcc gttttgcaa tgtttactgc 900
cgggagcgaa acaacttoga aagctacaga atgggtaatg gcagagctga tgaaaaatcc 960
aactgaacta agaaaagcac aagaagaagt tagacaagta tttggtgaaa tgggaaaagt 1020
tgatgaatca agatttctag atttgaaatt cttcaagtta gtggttaaag aaactctaag 1080
attacatcct ccggttgtct tgattccgag ggagtgtaga gaaacaacac gaattgatgg 1140
atatgaaatt catccgaaca ctgaattgt tgtgaatgct tgggcgatag gaagagatcc 1200
taatacttgg tcggaacctg gaaagttaa cccagaaagg tttaaagatt gtgcaattga 1260
ttataaaggg acgacatttg aactggtacc atttggtgca ggaaaaagaa tatgtcctgg 1320
cattacttca gctattacca atttggagta tgtcattata aatctattat atcattttta 1380
ttgggaactg gccgatggaa ttacacctca aacacttgat atgactgaag ctattggcgg 1440
tgctctcagg aaaaaaatag atcttaagtt gattcctatt ccatatcaag ttagcttagg 1500
ctcaaatatt tcttgattac ataggagggt tgaaatatat ataataaact ttaattaacg 1560
atgttcta atgtgtttggg tgagttataa taggttttcc accgatcata taagtagcct 1620
tctttgatgg atgggttaga ttataatgag ttgtgggttg gatttttaga tgggttaaat 1680
gatttgatg gataataata aattgaaatg ttttctttt caaatccgaa aaa 1733
```

<210> 2

<211> 500

<212> PRT

<213> Euphorbia lagascae

<400> 2

Met Glu Gln Lys Asn Leu Ser Phe Pro Ser Ile Leu Ile Ser Phe Leu  
1 5 10 15

Leu Val Leu Ile Leu Val Val Val Met Arg Leu Trp Lys Lys Gln Asn  
20 25 30

Pro Pro Pro Gly Pro Trp Lys Phe Pro Ile Ile Gly Asn Leu Pro His  
35 40 45

Leu Leu Leu Thr Ser Asp Leu Gly His Glu Arg Phe Arg Ala Leu Ala  
50 55 60

Gln Ile Tyr Gly Pro Val Met Ser Leu Gln Ile Gly Gln Val Ser Ala  
65 70 75 80

Val Val Ile Ser Ser Ala Glu Ala Ala Lys Glu Val Met Lys Thr Gln  
85 90 95

Ala Asp Ala Phe Ala Gln Arg Pro Ile Val Leu Asp Ala Gln Ile Val  
100 105 110

Phe Tyr Asn Arg Lys Asp Val Leu Phe Ala Ser Tyr Gly Asp His Trp  
115 120 125

Arg Gln Met Lys Lys Ile Trp Ile Leu Glu Phe Leu Ser Ala Lys Lys  
130 135 140

Val Gln Ser Ser Arg Leu Ile Arg Glu Glu Glu Met Glu Asp Ala Ile  
145 150 155 160

Thr Phe Leu Arg Ser Lys Ala Gly Ser Pro Val Asn Ile Thr Lys Ile  
165 170 175

Ile Tyr Gly Ile Ile Ile Ser Ile Met Ile Arg Thr Ser Val Gly Asn  
180 185 190

Cys Lys Gln Lys Glu Arg Leu Leu Ser Val Ala Asp Ala Val Asn Glu  
195 200 205

Ala Ala Thr Ser Phe Gly Thr Ala Asp Ala Phe Pro Thr Trp Lys Leu  
210 215 220

Leu His Tyr Ile Ile Gly Ala Glu Ser Lys Pro Arg Arg Leu His Gln  
225 230 235 240

Glu Ile Asp Asp Ile Leu Glu Glu Ile Leu Asn Glu His Lys Ala Asn  
245 250 255

Lys Pro Phe Glu Ala Asp Asn Leu Met Asp Val Leu Leu Asn Leu Gln  
260 265 270

Lys Asn Gly Asn Val Pro Val Pro Val Thr Asn Glu Ser Ile Lys Ala  
275 280 285

Ser Val Leu Gln Met Phe Thr Ala Gly Ser Glu Thr Thr Ser Lys Ala  
290 295 300

Thr Glu Trp Val Met Ala Glu Leu Met Lys Asn Pro Thr Glu Leu Arg  
305 310 315 320

Lys Ala Gln Glu Glu Val Arg Gln Val Phe Gly Glu Met Gly Lys Val  
 325 330 335  
 Asp Glu Ser Arg Phe His Asp Leu Lys Phe Phe Lys Leu Val Val Lys  
 340 345 350  
 Glu Thr Leu Arg Leu His Pro Pro Val Val Leu Ile Pro Arg Glu Cys  
 355 360 365  
 Arg Glu Thr Thr Arg Ile Asp Gly Tyr Glu Ile His Pro Asn Thr Arg  
 370 375 380  
 Ile Val Val Asn Ala Trp Ala Ile Gly Arg Asp Pro Asn Thr Trp Ser  
 385 390 395 400  
 Glu Pro Gly Lys Phe Asn Pro Glu Arg Phe Lys Asp Cys Ala Ile Asp  
 405 410 415  
 Tyr Lys Gly Thr Thr Phe Glu Leu Val Pro Phe Gly Ala Gly Lys Arg  
 420 425 430  
 Ile Cys Pro Gly Ile Thr Ser Ala Ile Thr Asn Leu Glu Tyr Val Ile  
 435 440 445  
 Ile Asn Leu Leu Tyr His Phe Asn Trp Glu Leu Ala Asp Gly Ile Thr  
 450 455 460  
 Pro Gln Thr Leu Asp Met Thr Glu Ala Ile Gly Gly Ala Leu Arg Lys  
 465 470 475 480  
 Lys Ile Asp Leu Lys Leu Ile Pro Ile Pro Tyr Gln Val Ser Leu Gly  
 485 490 495  
 Ser Asn Ile Ser  
 500

<210> 3  
 <211> 502  
 <212> PRT  
 <213> Capsicum annuum

<400> 3  
 Met Glu Ile Gln Phe Thr Asn Leu Val Ala Phe Leu Leu Phe Leu Ser  
 1 5 10 15  
 Ser Ile Ile Leu Leu Leu Lys Lys Trp Lys Thr Gln Lys Leu Asn Leu  
 20 25 30  
 Pro Pro Gly Pro Trp Lys Leu Pro Phe Ile Gly Ser Leu His His Leu  
 35 40 45  
 Ala Val Ala Gly Pro Leu Pro His His Gly Leu Lys Asn Leu Ala Lys  
 50 55 60  
 Leu Tyr Gly Pro Leu Met His Leu Arg Leu Gly Glu Ile Pro Thr Val  
 65 70 75 80  
 Ile Ile Ser Ser Pro Arg Met Ala Lys Glu Val Leu Lys Thr His Asp  
 85 90 95

Leu Ala Phe Ala Thr Arg Pro Lys Leu Val Val Ala Asp Ile Val His  
 100 105 110  
 Tyr Asp Ser Thr Asp Ile Ala Phe Ser Pro Tyr Gly Glu Tyr Trp Arg  
 115 120 125  
 Gln Ile Arg Lys Ile Cys Ile Leu Glu Leu Leu Ser Ala Lys Met Val  
 130 135 140  
 Lys Phe Phe Ser Ser Ile Arg Gln Asp Glu Leu Ser Met Met Val Ser  
 145 150 155 160  
 Ser Ile Arg Thr Met Pro Asn Phe Pro Val Asn Leu Thr Asp Lys Ile  
 165 170 175  
 Phe Trp Phe Thr Ser Ser Val Thr Cys Arg Ser Ala Leu Gly Lys Ile  
 180 185 190  
 Cys Arg Asp Gln Asp Lys Leu Ile Ile Phe Met Arg Glu Ile Ile Ser  
 195 200 205  
 Leu Thr Gly Gly Phe Ser Ile Ala Asp Phe Phe Pro Thr Trp Lys Met  
 210 215 220  
 Leu His Asp Val Gly Gly Ser Lys Thr Arg Leu Leu Lys Ala His Arg  
 225 230 235 240  
 Lys Ile Asp Glu Ile Leu Glu His Val Val Asn Glu His Lys Gln Asn  
 245 250 255  
 Arg Ala Asp Gly Gln Lys Gly Asn Gly Glu Phe Gly Gly Glu Asp Leu  
 260 265 270  
 Ile Asp Val Leu Leu Arg Val Arg Glu Ser Gly Glu Val Gln Ile Ser  
 275 280 285  
 Ile Thr Asp Asp Asn Ile Lys Ser Ile Leu Val Asp Met Phe Ser Ala  
 290 295 300  
 Gly Ser Glu Thr Ser Ser Thr Thr Ile Ile Trp Ala Leu Ala Glu Met  
 305 310 315 320  
 Met Lys Lys Pro Ser Val Leu Ala Lys Ala Gln Ala Glu Val Arg Gln  
 325 330 335  
 Val Leu Lys Glu Lys Lys Gly Phe Gln Gln Ile Asp Leu Asp Glu Leu  
 340 345 350  
 Lys Tyr Leu Lys Leu Val Ile Lys Glu Thr Leu Arg Met His Pro Pro  
 355 360 365  
 Ile Pro Leu Leu Val Pro Arg Glu Cys Met Lys Asp Thr Lys Ile Asp  
 370 375 380  
 Gly Tyr Asn Ile Pro Phe Lys Thr Arg Val Ile Val Asn Ala Trp Ala  
 385 390 395 400  
 Ile Gly Arg Asp Pro Glu Ser Trp Asp Asp Pro Glu Ser Phe Ser Pro  
 405 410 415  
 Glu Arg Phe Glu Asn Ser Ser Val Asp Phe Leu Gly Ser His His Gln

420

425

430

Phe Ile Pro Phe Gly Ala Gly Arg Arg Ile Cys Pro Gly Met Leu Phe  
 435 440 445

Gly Leu Ala Asn Val Gly Gln Pro Leu Ala Gln Leu Leu Tyr His Phe  
 450 455 460

Asp Arg Lys Leu Pro Asn Gly Gln Ser His Glu Asn Leu Asp Met Thr  
 465 470 475 480

Glu Ser Pro Gly Ile Ser Ala Thr Arg Lys Asp Asp Leu Val Leu Ile  
 485 490 495

Ala Thr Pro Tyr Asp Pro  
 500

&lt;210&gt; 4

&lt;211&gt; 51

&lt;212&gt; DNA

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt;

&lt;223&gt; oligonucleotide primer

&lt;400&gt; 4

tcaaggagaa aaaaccccg atccatggag cagaaaaatc tctcttttcc g

51

&lt;210&gt; 5

&lt;211&gt; 35

&lt;212&gt; DNA

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt;

&lt;223&gt; oligonucleotide primer

&lt;400&gt; 5

ggccagtga ttgtaatacg actcactata gggcg

35

&lt;210&gt; 6

&lt;211&gt; 35

&lt;212&gt; DNA

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt;

&lt;223&gt; oligonucleotide primer

&lt;400&gt; 6

gcggccgcga attcggaaaa tggagcagaa aaatc

35

&lt;210&gt; 7

<211> 35  
<212> DNA  
<213> artificial sequence  
  
<220>  
<221> misc\_feature  
<222>  
<223> oligonucleotide primer  
  
<400> 7  
gcggccgcgg atccttagaa catcgtaat taaag

35

3